Environmental Restoration

Industrial Sites Project

. . .an Approach to Cleanup

Background

The Environmental Management Program (EM) was established in 1989 at U.S. Department of Energy (DOE) offices around the country to address the environmental liabilities associated with more than 50 years of nuclear weapons production and testing. More than ten years later, EM is the world's largest environmental cleanup effort. As part of that effort, the DOE Nevada Site Office is responsible for cleaning up the Nevada Test Site, the Tonopah Test Range (located on the Nevada Test and Training Range and also known as the Nellis Air Force Range) and nine off-site locations around the country. Cleanup activities include identifying the nature and extent of contamination; determining its potential risk to the public and environment; and performing the necessary corrective actions in compliance with guidelines and requirements.

Site History

The Nevada Test Site and the Tonopah Test Range played important roles in the advancement of the nation's nuclear testing program, functioning like small towns with a variety of facilities like gas stations, motor pools, worker housing, and research buildings. Some of the facilities and land were used in direct support of nuclear testing and were contaminated. As a result of their support activities, a large volume of contaminated waste was generated. The waste is in various forms which include combinations of chemicals, ordnance, and radioactive material. All of these sites were deemed to be Industrial Sites and require cleanup.

Site Remediation

There are several ways to clean up a contaminated industrial site, to include: excavation and removal, demolition, dismantlement, entombment, administrative controls, or a combination of these techniques. Prior to selecting a cleanup strategy, the Nevada Site Office must first characterize and determine the extent of contamination.

Industrial Sites Projects are governed by an agreement with the state of Nevada called the Federal Facilities Agreement and Consent Order. This agreement outlines a series of activities that must be completed before an Industrial Site can be classified as clean or closed in place with use restrictions. Industrial Sites range from a simple to complex cleanup effort by simply removing debris or items such as a vehicle battery to completely demolishing a building or digging up a debris pit.

Simple Cleanup vs. Complex Cleanup

- The housekeeping process is assumed when the extent of the waste for a site is clearly defined and can be readily removed.
- The SAFER process is used when the site is clearly defined without the need for further characterization.
- The Complex Process is used when further characterization is necessary.

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Cleanup Process

Industrial Sites such as septic tanks, leachfields, sewage lagoons, waste dumps, mud pits, and facilities used in testing and support activities are more complex to clean than a site containing a discarded vehicle battery and thus require complex closure. Complex closure involves a:

- Corrective Action Investigation Plan
- Site Investigation
- Corrective Action Decision Document
- Corrective Action Plan
- Plan Implementation
- Closure Report

The Federal Facility Agreement and Consent Order (FFACO) is a 1996 agreement between the state of Nevada's Division of Environmental Protection, the DOE and the U.S. Department of Defense. The FFACO outlines a schedule of cleanup and monitoring commitments for sites contaminated by DOE and U.S. Department of Defense activities, and requires the State's approval of remediation activities. Once the State has approved closure, a notice of completion is issued to mark the end of the closure process. Industrial Sites which have a great deal of process knowledge and previous sampling results may qualify for a cleanup approach called Streamlined Approach for Environmental Restoration (SAFER). This process bypasses the Corrective Action Plan, Corrective Action Investigation Plan, and Correction Action Decision Document. A SAFER plan is prepared, the corrective action is implemented, and a Closure Report is prepared.

Deactivation and Decommissioning

Deactivation and decommissioning is a closure process used for facilities that have no current or future mission. While contaminated soil is the most common waste produced at Industrial Sites, contaminated building debris and equipment is most prevalent at deactivation and decommissioning sites. The deactivation and decommissioning process involves the following steps:

- Characterization – collecting information about the site to learn about possible contamination;
- Design – choosing the appropriate cleanup method; and
- Remediation – actual site cleanup.

Once work is complete, verification surveys are done and a final closure report is written by the contractor stating that the site is clean or closed in place with use restrictions. The report is then submitted to the state of Nevada for approval.

Technology

A wide range of technologies are used in Industrial Sites cleanup efforts. These technologies range from hydraulic shears used in building demolition to x-ray technologies that result in faster, safer cleanup.

Since the Environmental Management program started in 1989, more than 1,700 sites have been identified as needing remediation. To date, well over 900 have been cleaned or closed in place. Of the remaining sites to be remediated, those scheduled for deactivation and decommissioning are maintained to ensure the safety of workers and the surrounding environment. The Industrial Sites Project is scheduled to be completed by 2008.

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